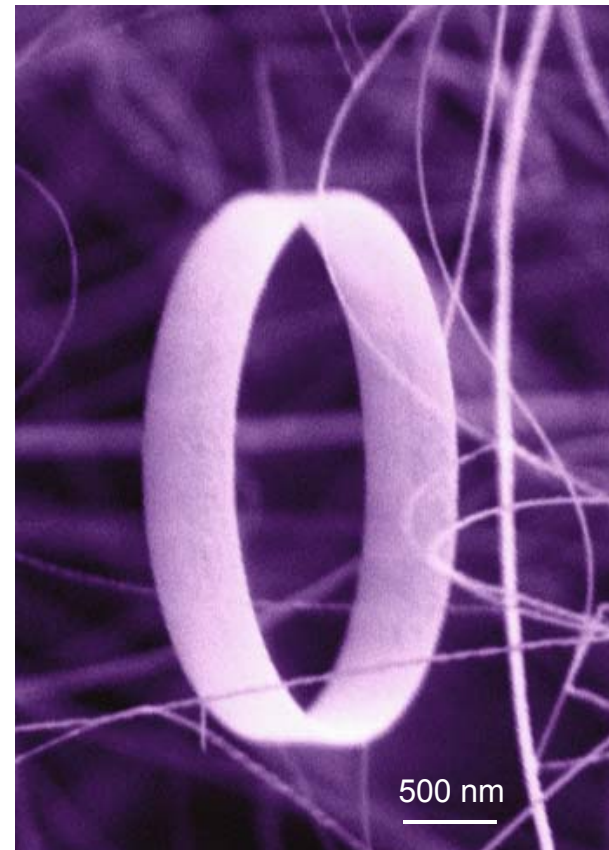


Self-assembly of magnetic nanocrystals

Zhong Lin (ZL) Wang, Georgia Tech, DMR-9733160

Freestanding, single-crystal, complete nanorings of zinc oxide are formed via a spontaneous self-coiling process during the growth of polar-nanobelts. The nanoring appears to be initiated by circularly folding a nanobelt caused by long-range electrostatic interaction. Co-axial and uni-radius loop-by-loop winding of the nanobelt forms a complete ring. Short-range chemical bonding among the loops results in a single-crystal structure. The self-coiling is likely to be driven by minimizing the energy contributed by polar charges, surface area, and elastic deformation. The nanoring offers application in piezoelectric driven nano-sensors, -transducers and -resonators.

Science **303**, 1348 (2004).



Single-crystal, seamless ZnO nanoring formed by self-coiling of a fine nanobelt.

Self-assembly of magnetic nanocrystals

Zhong Lin (ZL) Wang, Georgia Tech, DMR-9733160

Education and outreach:

Two undergraduates (Jenny Harrison and Kevin Rodkey), two graduate students (Puxian Gao, Brent Buchini), and one postdoc (X.Y. Kong) contributed to this work. Dr. Wang has also initiated two new courses on nanotechnology: Introduction to Nanomaterials and Nanotechnology; Advanced Nanomaterials, which were offered starting fall 2003 to both undergraduate and graduate students. Dr. Wang has also given lectures on nanotechnology to local middle schools and minority colleges, such as University of Alabama AM University.



Dr. Z.L. Wang was giving lecture to 7th grade talented class in Homecomb Bridge Middle School at Atlanta